

WHAT IS CLAIMED IS:

N
P
N
K
1. A therapeutic composition for nasal administration comprising a therapeutically effective amount of a vitamin B₁₂ in an isotonic aqueous buffer at a pH of from about 4 to 6 containing sufficient thickening agent so that the viscosity is from about 2500 to 6500 cps.

H
2. A therapeutic composition of Claim 1 wherein the vitamin B₁₂ is cyanocobalamin.

C
3. A composition as in Claim 1 or 2 additionally containing from about 1% to 10% by weight ~~based on the total weight~~ of a humectant.

C
4. A composition as in Claim 1 or 2 additionally containing from about 0.2% to 2% by weight ~~based on the total weight~~ of a surfactant.

C
C
C
5. A composition as in Claim 1 or 2 additionally containing from about 1% to 10% by weight ~~based on the total weight~~ of a humectant and from about 0.2% to 2% by weight ~~based on the total weight~~ of a surfactant.

6. A therapeutic composition as in Claim 1 wherein the thickening agent is methyl cellulose.

H
7. A therapeutic composition of Claim 6 wherein the vitamin B₁₂ is cyanocobalamin.

C
BC
C
8. A therapeutic composition of Claim 6 or 7 additionally containing from about 1% to 10% by weight ~~based on the total weight~~ of a humectant and from about 0.2% to 2% by weight ~~based on the total weight~~ of a surfactant.

claim 9

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9. A therapeutic composition for nasal administration in dosage unit form containing from 50 to 1000 micrograms of a vitamin B₁₂ in an isotonic aqueous buffer at a pH of from about 4 to 6 containing sufficient thickening agent so that the viscosity is from about 2500 to 6500 cps.

H
10. A therapeutic composition as in Claim 9 wherein the vitamin B₁₂ is cyanocobalamin.

C
C
11. A therapeutic composition as in Claim 9 or 10 additionally containing from about 1% to 10% by weight ~~based on the total~~ weight of a humectant.

C
C
12. A therapeutic composition as in Claim 9 or 10 additionally containing from about 0.2% to 2% by weight ~~based on the total~~ weight of a surfactant.

C
C
13. A therapeutic composition as in Claim 9 or 10 additionally containing from about 1% to 10% by weight ~~based on the total~~ weight of a surfactant.

14. A therapeutic composition as in Claim 9 wherein the thickening agent is methyl cellulose.

H
15. A therapeutic composition as in Claim 14 wherein the vitamin B₁₂ is a cyanocobalamin.

C
C
C
16. A therapeutic composition as in Claim 14 or 15 additionally containing from about 1% to 10% by weight ~~based on the total~~ weight of a humectant and from about 0.2% to 2% by weight ~~based on the total weight~~ of a surfactant.

N
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Sub B3
17. A method of treating a human for vitamin B₁₂ deficiency which comprises nasal administration to a human in need of such treatment a composition containing a therapeutically effective

Claim 17

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P
1C Sub B₃ cont
amount of a vitamin B₁₂ in an isotonic aqueous buffer at a pH of from about 4 to 6 containing sufficient thickening agent so that the viscosity is from about 2500 to 6500 cps.

14 18 A method as in Claim 17 wherein the vitamin B₁₂ is cyanocobalamin.

C
C 19. A method as in Claim 17 or 18 wherein the composition additionally contains from about 1% to 10% by weight ~~based on the total weight~~ of a humectant.

C
C 20. A method as in Claim 17 or 18 wherein the composition additionally contains from about 0.2% to 2% by weight ~~based on the total weight~~ of a surfactant.

C
C
C 21. A method as in Claim 17 or 18 wherein the composition additionally contains from about 1% to 10% by weight ~~based on the total weight~~ of a humectant and from about 0.2% ^{to 2%} by weight ~~based on the total weight~~ of a surfactant.

22. A method as in Claim 17 wherein the thickening agent is methyl cellulose.

H 23. A method as in Claim 22 wherein the vitamin B₁₂ is cyanocobalamin.

N Sub B₄
A 24. A method as in Claim 22 or 23 additionally containing from about 1% to 10% by weight based on the total weight of a humectant and from about 0.2% to 2% by weight based on the total weight of a surfactant.

K Add B₅

15

19 claims 24-27